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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/877,217 | 06/11/2001 | Ikuya Tsurukawa | 206470US-2 | 9559 |

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| EXAMINER | |
|---|---|
| ELKASSABGI, HEBA | |
| ART UNIT | PAPER NUMBER |
| 2834 | |

DATE MAILED: 01/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) |
|---|---|---|
| | 09/877,217 | TSURUKAWA ET AL. |
| | Examiner | Art Unit |
| | Heba Elkassabgi | 2834 |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *09/12/2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

## DETAILED ACTION

### *Information Disclosure Statement*

The information disclosure statement (IDS) submitted on 10/09/2003 is being considered by the examiner the submission is in compliance with the provisions of 37 CFR 1.97.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1,3,10,12,18,20,23,26, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Prior Art (which will be referred to as APA and further in view of Aoki (J.P. 54097712).

APA discloses a DC motor comprising a rotor with a rotation shaft, rotor coils, and a stator configured to apply a magnetic filed to the rotor via magnetic poles of the stator to the opposing magnetic poles of the rotor. In addition, APA discloses a pair electrode brushes in sliding contact with the contact electrode part of the commutator at respective sliding contact positions of a different distance from an axis of the rotation and is configured to supply electric power to the rotor coils through the commutator. Wherein the respective sliding contact

positions of the electrode brushes with the contact electrode part are shifted in the radial direction. Furthermore, the electrode brushes are split into plural separate portions, wherein the sliding contacts of the separate portions with the contact electrode part of the commutator causes a phase difference due to a shift of the rotation angle positions of the sliding contacts of the separate portions relative to the contact electrode pad. Further including, electrode brushes that are configured to contact the commutator at representative first and second rotation angle positions 180 degrees apart on the commutator at a third rotation position such that an angle formed between one rotation detecting brush. However, APA does not disclose an electrical parts mounting baseboard in contact with the rotational shaft and a commutator including a contact electrode pad formed with a plan conductive layer.

Aoki discloses in Figure 1 and 2 a DC motor having a stator (3), a rotor (9,10) with armature coils (10), a rotor shaft (8), and a commutator (11). The commutator base (11) having a spark distinguishing element (plane conductive layer, 13) that contacts the rotor coil (10) and a commutator chip (contact electrode part, 12). The commutator chip (12-1,12-2,12-3) is directly formed on the opposite side of the commutator base (electrical parts mounting base board, 11). In which a pair of electrode brushes (6) are in sliding contact with the commutator chip (12). Aoki structure of a DC motor with a stator, rotor, and a flat commutator is to reduce the axial dimension of the motor.

It would have been obvious to one of ordinary skill in the a art to combine the DC motor structure of APA with Aoki's commutator in order to form a flat smaller sized DC motor.

In regards to claims 20- 23 the examiner notes that the method of making are inherently included in the apparatus disclosed above.

Claims 2,8,13,17,21, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Prior Art (which will be referred to as APA) and further in view of Aoki (JP 54097712) as applied to claims 1,12,20, and 23 above, and further in view of Suzuki (U.S. Patent 51 19466).

APA discloses a DC motor comprising a rotor with a rotation shaft, rotor coils, and a stator configured to apply a magnetic filed to the rotor via magnetic poles of the stator to the opposing magnetic poles of the rotor. In addition, APA discloses a pair electrode brushes in sliding contact with the contact electrode part of the commutator at respective sliding contact positions of a different distance from an axis of the rotation and is configured to supply electric power to the rotor coils through the commutator. Wherein the respective sliding contact positions of the electrode brushes with the contact electrode pad are shifted in the radial direction. Furthermore the electrode brushes are split into plural separate portions, wherein the sliding contacts of the separate portions with the contact electrode part of the commutator causes a phase difference due to a shift

of the rotation angle positions of the sliding contacts of the separate portions relative to the contact electrode part. Further including, electrode brushes that are configured to contact the commutator at representative first and second rotation angle positions 180 degrees apart on the commutator at a third rotation position such that an angle formed between one rotation detecting brush. However, APA does not disclose an electrical parts mounting baseboard in contact with the rotational shaft and a commutator including a contact electrode pad formed with at plain conductive layer and a noise- suppressing element.

Aoki discloses in Figure 1 and 2 a DC motor having a stator (3), a rotor (9,10) with armature coils (10), a rotor shaft (8), and a commutator (11). The commutator base (11) having a spark distinguishing element (plane conductive layer, 13) that contacts the rotor coil (10) and a commutator chip (contact electrode part, 12). The commutator chip (12-1,12-2,12-3) is directly formed on the opposite side of the commutator base (electrical parts mounting base board, 11). In which a pair of electrode brushes (6) are in sliding contact with the commutator chip (12). Aoki structure of a DC motor with a stator, rotor, and a flat commutator is to reduce the axial dimension of the motor.

Suzuki illustrates in Figure 3 a DC motor having a noise-suppressing element (lower case member which performs a function of an electromagnetic shield)(34) is provided on the electrical parts mounting baseboard (printed circuit boardll4o, in order to suppress noise produced in the direct current motor.

It would have been obvious to one of ordinary skill in the art to combine the DC motor structure of APA with Aoki's commutator in order to form a flat smaller sized DC motor and Suzuki's noise-suppressing element in order to suppress noise produced in the direct current motor.

In regards to the method of making in claims 21and 24 are inherently included in the apparatus disclosed above.

Claims 4 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Prior Art (which will be referred to as APA) and further in view of Aoki (JP 54097712) as applied to claims 1 and 12 above, and further in view of Ohtake et al. (U.S. Patent 5598045).

APA discloses a DC motor comprising a rotor with a rotation shaft, rotor coils, and a stator configured to apply a magnetic filed to the rotor via magnetic poles of the stator to the opposing magnetic poles of the rotor. In addition, APA discloses a pair electrode brushes in sliding contact with the contact electrode part of the commutator at respective sliding contact positions of a different distance from an axis of the rotation and is configured to supply electric power to the rotor coils through the commutator. Wherein the respective sliding contact positions of the electrode brushes with the contact electrode part are shifted in the radial direction. Furthermore, the electrode brushes are split into plural separate portions, wherein the sliding contacts of the separate portions with the

contact electrode part of the commutator causes a phase difference due to a shift of the rotation angle positions of the sliding contacts of the separate portions relative to the contact electrode pad. Further including, electrode brushes that are configured to contact the commutator at representative first and second rotation angle positions 180 degrees apart on the commutator at a third rotation position such that an angle formed between one rotation detecting brush. However, APA does not disclose an electrical parts mounting baseboard in contact with the rotational shaft and a commutator including a contact electrode pad formed with a plan conductive layer and external terminals.

Aoki discloses in Figure 1 and 2 a DC motor having a stator (3), a rotor (9,10) with armature coils (10), a rotor shaft (8), and a commutator (11). The commutator base (11) having a spark distinguishing element (plane conductive layer, 13) that contacts the rotor coil (10) and a commutator chip (contact electrode part, 12). The commutator chip (12-1,12-2,12-3) is directly formed on the opposite side of the commutator base (electrical parts mounting base board, 11). In which a pair of electrode brushes (6) are in sliding contact with the commutator chip (12). Aoki structure of a DC motor with a stator, rotor, and a flat commutator is to reduce the axial dimension of the motor.

Ohtake et al. discloses in Figure 1 a support base (case cap) (6) having to support the rotation shaft (12) of the rotor (5). Wherein, the electrode brushes

(45), fixed to the support base (6) includes external terminals (pig-tail wires) (14), in order to provide external connection to the DC motor.

It would have been obvious to one of ordinary skill in the art to combine the DC motor structure of APA with Aoki's commutator with a plane conductive layer and the contact electrode pad in order to form a flat smaller sized DC motor and Ohtake et al.'s structure of the support base with the brushes and terminals in order to provide an external connection to the DC motor.

Claims 5,9,7,11,15, 19,22,25,27, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Prior Art (which will be referred to as APA) and further in view of Aoki (JP 54097712) as applied to claims 1,20, and 23 above, and further in view of Fassel et al. (U.S. Patent 4514670).

APA discloses a DC motor comprising a rotor with a rotation shaft, rotor coils, and a stator configured to apply a magnetic filed to the rotor via magnetic poles of the stator to the opposing magnetic poles of the rotor. In addition, APA discloses a pair electrode brushes in sliding contact with the contact electrode part of the commutator at respective sliding contact positions of a different distance from an axis of the rotation and is configured to supply electric power to the rotor coils through the commutator. Wherein the respective sliding contact positions of the electrode brushes with the contact electrode part are shifted in

the radial direction. Furthermore, the electrode brushes are split into plural separate portions, wherein the sliding contacts of the separate portions with the contact electrode part of the commutator causes a phase difference due to a shift of the rotation angle positions of the sliding contacts of the separate portions relative to the contact electrode pad. Further including, electrode brushes that are configured to contact the commutator at representative first and second rotation angle positions 180 degrees apart on the commutator at a third rotation position such that an angle formed between one rotation detecting brush. However, APA does not disclose an electrical parts mounting baseboard in contact with the rotational shaft and a commutator including a contact electrode pad formed with a plan conductive layer and external terminals.

Aoki discloses in Figure 1 and 2 a DC motor having a stator (3), a rotor (9,10) with armature coils (10), a rotor shaft (8), and a commutator (11). The commutator base (11) having a spark distinguishing element (plane conductive layer, 13) that contacts the rotor coil (10) and a commutator chip (contact electrode part, 12). The commutator chip (12-1,12-2,12-3) is directly formed on the opposite side of the commutator base (electrical parts mounting base board, 11). In which a pair of electrode brushes (6) are in sliding contact with the commutator chip (12). Aoki structure of a DC motor with a stator, rotor, and a flat commutator is to reduce the axial dimension of the motor.

Fassel et al. discloses in Figure 1 a DC motor (2) in which at least one rotation detecting brush (not shown) is in sliding contact with the contact electrode part (sensing - resistorltl8) of the commutator and configured to detect a signal on the commutator indicative of an operation of the DC motor and that at least one sliding contact position of the detecting means are arranged at a different distance that in order to have a cycling time or period of the undulation to be reversibly proportioned to the speed of the motor.

It would have been obvious to one of ordinary skill in the art to combine the DC motor structure of APA with Aoki's commutator with a plane conductive layer and the contact electrode pad in order to form a flat smaller sized DC motor and Fassel et al. brush in sliding contact with the contact electrode part in order to have a cycle time or period of the undulation to be reversibly proportioned to the speed of the motor.

In regards to the method of making in claims 22,25,27,and 29 the claims are inherently included in the apparatus disclosed above.

In regards to claim 7, it would have been obvious to one having ordinary skill in the art at the time the invention was made to decide the angular position of the crushes in relation to the commutator, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Claim 6 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Prior Art (which will be referred to as APA) and further in view of Aoki ((JP 54097712) and Ohtake et al. (U.S. Patent 5598045) and Fassel et al. (U.S. Patent 4514670).

APA discloses a DC motor comprising a rotor with a rotation shaft, rotor coils, and a stator configured to apply a magnetic filed to the rotor via magnetic poles of the stator to the opposing magnetic poles of the rotor. In addition, APA discloses a pair electrode brushes in sliding contact with the contact electrode pad of the commutator at respective sliding contact positions of a different distance from an axis of the rotation and is configured to supply electric power to the rotor coils through the commutator. Wherein the respective sliding contact positions of the electrode brushes with the contact electrode part are shifted in the radial direction. Furthermore the electrode brushes are split into plural separate portions, wherein the sliding contacts of the separate portions with the contact electrode part of the commutator causes a phase difference due to a shift of the rotation angle positions of the sliding contacts of the separate portions relative to the contact electrode part. Further including, electrode brushes that are configured to contact the commutator at representative first and second rotation angle positions 180 degrees on the commutator at a third rotation position such that an angle formed between one rotation detecting brush. However, APA does not disclose an electrical parts mounting baseboard in contact with the rotational shaft and a commutator including a contact electrode

pad formed with a plain conductive layer and rotational brush in contact with the electrical pad, and a noise-suppressing element.

Aoki discloses in Figure 1 and 2 a DC motor having a stator (3), a rotor (9,10) with armature coils (10), a rotor shaft (8), and a commutator (11). The commutator base (11) having a spark distinguishing element (plane conductive layer, 13) that contacts the rotor coil (10) and a commutator chip (contact electrode part, 12). The commutator chip (12-1,12-2,12-3) is directly formed on the opposite side of the commutator base (electrical parts mounting base board, 11). In which a pair of electrode brushes (6) are in sliding contact with the commutator chip (12). Aoki structure of a DC motor with a stator, rotor, and a flat commutator is to reduce the axial dimension of the motor.

Ohtake et al. discloses in Figure 1 a support base (case cap) (6) having to support the rotation shaft (12) of the rotor (5). Wherein, the electrode brushes (45), fixed to the support base (6) includes external terminals (pig-tail wires) (14), in order to provide external connection to the DC motor.

Fassel et al. discloses in Figure 1 a DC motor (2) in which at least one rotation detecting brush (not shown) is in sliding contact with the contact electrode part (sensing resistorltl8) of the commutator and configured to detect a signal on the commutator indicative of an operation of the DC motor and that at least one sliding contact position of the detecting means are arranged at a

different distance that in order to have a cycling time or period of the undulation to be reversibly proportioned to the speed of the motor.

It would have been obvious tone of ordinary skill in the art to combine the DC motor structure of APA with Aoki's commutator in order to form a flat smaller sized DC motor and Ohtake et al.'s structure of the support base with the brushes and terminals in order to provide an external connection to the DC motor and Fassel et al. brush in sliding contact with the contact electrode part in order to have a cycle time or period of the undulation to be reversibly proportioned to the speed of the motor.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Heba Elkassabgi whose telephone number is (703) 305-2723. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Burt Mullins can be reached on (703) 305-7063. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

HYE

BURTON S. MULLINS
PRIMARY EXAMINER